

Six new species of the genus *Laena* Dejean from China (Coleoptera, Tenebrionidae, Lagriinae)

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Abstract

Six new species of *Laena* Dejean, *Laena quadrata* **sp. n.** and *Laena motogana* **sp. n.** (China: Xizang), *Laena chiloriluxa* **sp. n.**, *Laena dentata* **sp. n.** and *Laena liangi* **sp. n.** (China: Yunnan), *Laena dentatocrassa* **sp. n.** (China: Hainan Island, representing new province record of the genus) are described, complemented with photos of habitus, illustrations of legs, antenna, aedeagus and last abdominal ventrite of male and female. Type specimens are deposited in both the Museum of Hebei University, Baoding, China and the Natural History Museum of Stuttgart, Germany. A key to the 102 Chinese species of genus *Laena* is provided.

Keywords

Coleoptera, Tenebrionidae, Lagriinae, *Laena*, new species, China, Xizang, Yunnan, Hainan Island

Introduction

Until now about 330 species of the genus *Laena* Dejean were described from the Palearctic and Oriental Regions, from which about 105 species (including the six new ones described below) were found in China. Most of them were described by the following authors: Schuster (1916, 1940), Kaszab (1956, 1970), Li and Wang (1993),

Masumoto and Yin (1993, 1994), Masumoto (1996, 1998), Ren and Hua (2006), Schawaller (2001, 2008) and Zhao and Ren (2011).

Recently six new species of *Laena* were identified from Xizang, Yunnan and Hainan Island (representing new province record of the genus) of China. The collecting localities of these new species are depicted in Fig. 58.

Taxonomy

Laena Dejean, 1821

Laena Dejean, 1821: 64; Latreille, 1829: 39.

Psilolaena Helier, 1923: 70.

Catolaena Reitter, 1900: 282.

Ebertius Jedlička, 1965: 98.

Type species. *Scaurus viennensis* J. Sturm, 1807.

Key to the species of *Laena* in China

- 1 Species from the southeastern and south provinces Guizhou, Guangxi, Jiangxi, Fujian and Hainan 2
- Species from the western and central provinces Xizang (=Tibet), Yunnan, Sichuan, Shaanxi, Hubei, Gansu and Henan 8
- 2 All femora with distinct teeth..... 3
- All femora without armature..... 5
- 3 All femora each with a tooth..... *L. dentatocrassa* sp. n.
- All femora each with a pair of unequal teeth 4
- 4 Lateral margins of pronotum unbordered *L. hlavaci*
- Lateral margins of pronotum bordered *L. cooteri*
- 5 Basal margin of pronotum nearly as wide as distal margin..... *L. guangxica*
- Basal margin of pronotum distinctly narrower than distal margin 6
- 6 Pronotum widest in the middle..... *L. guizhouica*
- Pronotum widest anteriorly 7
- 7 Small body size (5.5–6.0 mm); aedeagus with triangular apical *L. jiangxica*
- Large body size (8.0–8.5 mm); aedeagus with rounder tip of apical.....
..... *L. fanjingshanana*
- 8 Pronotum with distinctly protruding anterior corners, thus anterior pronotal margin with distinct convex excavation..... 9
- Pronotum without protruding anterior corners, anterior pronotal margin straight or at most weakly excavated..... 12
- 9 Lateral margins of pronotum unbordered *L. quinquagesima*
- Lateral margins of pronotum bordered 10

- 10 Pronotal surface with distinct impressions, elytral intervals flat with scattered fine punctures *L. basumtsoica*
- Pronotal surface flat, without impressions, elytral intervals wrinkled with large and nearly confluent punctures 11
- 11 Body length 7.0 mm, male posterior tibiae interiorly without granules, aedeagus with broad, spade-like apicale *L. janatai*
- Body length 6.0–6.5 mm, male posterior tibiae interiorly with granules, aedeagus with longer apicale with knob-like tip *L. michaeli*
- 12 Elytral interval VII keel-like and pronounced, lateral intervals VIII and IX not or indistinctly visible in dorsal view, internal intervals between these keel-like intervals flat or nearly flat 13
- Elytral interval VII not keel-like, sometimes interval VII distinctly convex or sometimes intervals III, V and VII convex, but interval VII not separating the joint elytra in a flat interior part and a vertical lateral part 23
- 13 All femora in both sexes with distinct teeth or angles 14
- All femora in both sexes completely without armature 15
- 14 All femora with distinct angles but without teeth, lateral margins of pronotum unbordered and rounded *L. kubani*
- All femora with distinct teeth, lateral margins of pronotum bordered *L. dabashanica*
- 15 Elytral interval VII keel-like, swollen and knob-like in the humeral region... 16
- Elytral interval VII keel-like over its total length and not swollen in the humeral region 18
- 16 Joint elytra about twice as long as wide; elytra with rows of fine punctures extinguishing in the posterior part; elytral intervals dull and without setation; aedeagus with long apicale *L. mirabilis*
- Joint elytra about 1.6 times as long as wide; elytra with rows of large punctures; elytral intervals shining and with adpressed setation; aedeagus with broad apicale 17
- 17 Body length 8.8–9.5 mm; elytral intervals wrinkled and with dense and coarse punctation; posterior tibiae of males armed with spines *L. mulica*
- Body length 7.0–7.5 mm; elytral intervals flat with fine punctation; posterior tibiae of males without spines *L. maowenica*
- 18 Body length 4.7–5.2 mm; lateral margins of pronotum crenulated *L. yajiangica*
- Body length over 6.0 mm; lateral margins of pronotum smooth 19
- 19 Pronotum besides impressions flat, so disc on the same level as lateral margins 20
- Pronotum besides impressions more or less convex, so disc higher than lateral margins 21
- 20 Base of pronotum with distinct impression (besides other impressions), this base distinctly narrower than anterior margin with protruding anterior corners; apicale of aedeagus broad, spade-like *L. yulongica*

- Base of pronotum without distinct impression, this base about as wide as anterior margin with rounded anterior corners; apicale of aedeagus longer, triangular ***L. bowaica***
- 21 Pronotum and elytra shining; pronotum strongly convex with distinct lateral border, basal margin bent downwards; elytra rows with fine punctures ***L. haigouica***
- Pronotum and elytra dull; pronotum feebly convex with marked but unbordered lateral margins, basal margin not bent downwards; elytral rows with large punctures **22**
- 22 Base of pronotum distinctly narrower than anterior margin; punctures of elytral intervals as large as punctures of the rows; apicale of aedeagus triangular.. ***L. habashanica***
- Base of pronotum about as wide as anterior margin; punctures of elytral intervals distinctly smaller than punctures of the rows; apicale of aedeagus spade-like..... ***L. schuelkei***
- 23 All femora or at least anterior femora in both sexes medially with teeth or distinct angles **24**
- All femora without distinct modifications **53**
- 24 Elytra (not pronotum) without any setation in the elytral rows and intervals **25**
- Elytra with long erect or short adpressed setae in the elytral rows and or in the elytral intervals..... **32**
- 25 Only anterior femora with distinct angles, middle and posterior femora without armature..... ***L. jinpingica***
- All femora with distinct teeth..... **26**
- 26 Posterior tibiae of males without distinct modifications **27**
- Posterior tibiae of males with modifications (hooked interior apex or medially with tooth or dilatation) **30**
- 27 Lateral margins of pronotum unbordered **28**
- Lateral margins of pronotum bordered **29**
- 28 Body length 6.2–7.5 mm, aedeagus with longer apicale with rounded finger-like tip ***L. smetanai***
- Body length 7.5–8.5 mm, aedeagus with broad apicale with blunt tip ***L. bohrni***
- 29 Basal margin of pronotum distinctly narrower than distal margin, pronotum cordiform; aedeagus with longer triangular apicale; anterior femora of males of similar size as middle and posterior femora, anterior femora besides hook-like tooth with rounded anterior corner ***L. chinensis***
- Basal margin of pronotum as wide as distal margin, pronotum subquadrate; aedeagus with broader spade-like apical; anterior femora of males extraordinary thick and besides broad tooth with additional tooth-like anterior corner ***L. sehnali***

- 30 Posterior tibiae of males with distinctly hooked inner apex, medial side with granules; apicale of aedeagus about twice as long as wide *L. turnai*
- Posterior tibiae of males medially dilatated or with teeth, without granules; apicale of aedeagus subquadrate **31**
- 31 Elytral intervals with distinct punctation; male anterior tibiae with parallel inner side; male posterior tibiae medially with tooth *L. tabanai*
- Elytral intervals only with very fine and scattered punctures; male anterior tibiae medially with dilatation; male posterior tibiae medially with rounded dilatation *L. hubeica*
- 32 Only anterior femora with teeth, medial and posterior tibiae without modifications **33**
- All femora with teeth or at least with distinct angles **34**
- 33 Anterior tibiae of males with parallel-sided broadened anterior part; posterior tibiae of males without hooked inner apex *L. quadrata* sp. n.
- Anterior tibiae of males without modifications; posterior tibiae of males with hooked inner apex *L. yasukii*
- 34 Male dorsal side with green metallic shine *L. chiloriluxa* sp. n.
- Male dorsal side without green metallic shine **35**
- 35 Middle femora each with a pair of teeth *L. dentata* sp. n.
- Middle femora each with a tooth **36**
- 36 Body length 9.3–9.6 mm; elytra with dense and large punctation of the intervals, so the elytral intervals are indistinct *L. shaluica*
- Body length less than 8.0 mm; elytra with distinct elytral rows and separated intervals **37**
- 37 Lateral margins of pronotum distinctly bordered **38**
- Lateral margins of pronotum unbordered, sometimes feebly marked **41**
- 38 Eyes prominent; pronotum cordiform with the basal margin distinctly narrower than anterior margin; body length 6.6–7.9 mm *L. angulifemoralis*
- Eyes not prominent; pronotum subquadrate with the basal margin as wide as the anterior margin; body length 3.5–6.0 mm **39**
- 39 Pronotum and elytra with erect and long setation; apicale of aedeagus short and broad *L. luguica*
- Pronotum and elytra with short and adpressed setation; apicale of aedeagus long and triangular **40**
- 40 Pronotum widest in the middle *L. formaneki*
- Pronotum widest near the anterior corners *L. farkaci*
- 41 Pronotum with coarse, partly confluent punctation, surface of pronotum wrinkled or uneven **42**
- Pronotum with fine punctation, punctures always distinctly separated, surface of pronotum smooth **45**
- 42 Odd-numbered elytral intervals distinctly convex; all femora with distinct teeth *L. ganzica*

- All elytral intervals homogeneous, either all slightly convex or all flat; femora only with angles, the latter partly reduced.....**43**
- 43 Pronotum subquadrate with the basal margin as wide as the anterior margin; male anterior tibiae medially with distinct tooth.....***L. ludingca***
- Pronotum cordiform with the basal margin narrower than the anterior margin; male anterior tibiae without modification**44**
- 44 Elytral intervals densely scattered with large and confluent punctures; aedeagus with broad apical with blunt tip.....***L. jizushana***
- Elytral intervals with a row of separated small punctures; aedeagus with triangular apicale.....***L. yufengsi***
- 45 Pronotum and elytra with dull shagreened surface and with long, dense and erect setation..... ***L. qinlingica***
- Pronotum and elytra with shining surface and with sparser short and adpressed setation.....**46**
- 46 Pronotum with fine and sparse punctation; pronotal punctures distinctly smaller than punctures of the elytral rows ***L. lisuorum***
- Pronotum with large punctures, which are of similar size as those of the elytral rows.....**47**
- 47 Pronotum cordiform, basal margin distinctly narrower than anterior margin **48**
- Pronotum either subquadrate or trapezoid, basal margin as wide as or only slightly narrower than anterior margin**49**
- 48 Joint elytra oval; aedeagus with longer triangular apicale..... ***L. wolongica***
- Joint elytra longer and parallel; aedeagus with broad apicale with blunt tip..
.....***L. barkamica***
- 49 Pronotum widest in the middle.....**50**
- Pronotum widest before the middle (three quite similar species, compare body length, dorsal punctation, setation and shape of aedeagus and distribution)..... **51**
- 50 Body length 3.7–3.8 mm; posterior tibiae of males only with finely hooked interior apex; aedeagus with longer triangular apicale.....***L. daxueica***
- Body length 5.0 mm; posterior tibiae of males with finely hooked interior apex and medially swollen in the middle; aedeagus with broader apicale with blunt apex..... ***L. cylindrica***
- 51 Body length above 5.5 mm. –Shaanxi and N Sichuan..... ***L. fengileana***
- Body length 3.0–4.2 mm. –S Tibet and Yunnan **52**
- 52 Punctures of elytral intervals smaller than pronotal punctures; punctures of elytral rows without setae, only elytral intervals with setae. –S Tibet
.....***L. gracilis***
- Punctures of elytral rows equal in size to pronotal punctures, each puncture bearing a seta, intervals with a row of fine punctures bearing a similar seta. –Yunnan***L. septuagesima***

- 53 Small species (4.2–6.0 mm) with distinctly dull surface and pronotum with coarse and confluent punctation 54
- Small and large species; if body length below 6.0 mm then with shining surface and pronotum with separated punctation 55
- 54 Elytral intervals III, V and VII distinctly but equally convex, other elytral intervals flat; lateral margins of pronotum marked and crenulated but unbordered; aedeagus with longer triangular apicale..... ***L. davidi***
- Elytral intervals III and V slightly, VII distinctly convex, intervals with rows of distinct granules; lateral margins of pronotum not bordered and not marked; aedeagus with broad spade-like apicale..... ***L. gaoligongica***
- 55 Elytra (not pronotum) without any setation or with very short setation in the elytral rows and or intervals (setae not distinctly longer than a diameter of the punctures in the rows) 56
- Elytra with distinct adpressed shorter or erect longer setation in the elytral rows and/or intervals..... 84
- 56 Punctuation of elytra confused, surface not distinctly separated in elytral rows and intervals 57
- Elytra always with distinct elytral rows and punctate or impunctate intervals, sometimes punctures in the intervals as large as in the rows, sometimes the elytral rows extinguished in the posterior part of the elytra 59
- 57 Body length 5.5–6.2 mm; punctuation on pronotum and elytra distinctly separated, surface shining..... ***L. heinzi***
- Body length 6.5–8.0 mm; punctuation on pronotum and elytra confluent, surface dull 58
- 58 Pronotum distinctly broader than long; elytra 1.5 times as long as wide, widest in posterior third ***L. businskyorum***
- Pronotum nearly as wide as long; elytra 1.8 times as long as wide, widest in the middle; few differences, but no intermediate forms known .. ***L. degenica***
- 59 Elytral intervals besides the puncture rows with distinct punctation, these punctures densely scattered and about half as large as punctures in the rows. ***L. safraneki***
- Elytral intervals between the puncture rows without distinct punctation or only with an indistinct row of very fine punctures 60
- 60 Small species (4.4–6.6 mm) from Tibet with a flat and subquadrate pronotum, pronotal disc smooth and without impressions, lateral pronotal margin bordered 61
- Smaller and larger species with different structure of the pronotum; if with similar pronotum then not from Tibet, if from Tibet then with a different pronotum 64
- 61 Male tibiae without secondary sexual characters..... 62
- Anterior and/or posterior male tibiae with secondary sexual characters 63
- 62 Pronotum with rounded lateral margins; elytral punctures larger, distance sometimes only about 1 diameter..... ***L. alticola***

- Pronotum with parallel lateral margins; elytral punctures finer, distance always over 2 diameter; few differences, but no intermediate forms known *L. parallelocollis*
- 63 Anterior and posterior tibiae of males swollen medially; apicale of aedeagus broad with blunt tip *L. tuntalica*
- Anterior tibiae of males slightly excavated medially; apicale of aedeagus narrower and triangular *L. cholanica*
- 64 Large species (7.8–10.3 mm) with long and parallel elytra, with a flat subquadrate pronotum with bordered lateral margins, and with a row of distinct spines interiorly in the distal half of the male posterior tibiae.....65
- Larger or smaller species with a different combination of these characters 68
- 65 Pronotum about 1.1–1.3 times as broad as long; apicale of aedeagus broad and with blunt tip.....66
- Pronotum about as wide as long; apicale of aedeagus triangular67
- 66 Pronotum widest before the middle; male anterior tibiae without modification.....*L. tryznai*
- Pronotum widest behind the middle; male anterior tibiae excavated medially..... *L. kalabi*
- 67 Pronotum with parallel sides; posterior tibiae of males besides spines distally somewhat swollen but without distinctly hooked inner apex.....*L. dickorei*
- Pronotum with rounded sides; posterior tibiae of males besides spines distally somewhat swollen and with distinctly hooked inner apex *L. gyamdaica*
- 68 Lateral margins of pronotum completely unbordered and also not marked ...69
- Lateral margins of pronotum completely or at least partly bordered.....71
- 69 Body small-sized (3.8–4.8 mm); pronotum cordiform, basal margin distinctly narrower than anterior margin *L. diancangica*
- Body medium-sized (6.5–8.8 mm); pronotum round70
- 70 Anterior tibiae of males medially with a distinct tooth; joint elytra of oval shape *L. schusteri*
- Anterior tibiae of males without modification; joint elytra long and parallel *L. hengduanica*
- 71 Posterior tibiae of males medially with a distinct hump-like dilatation shortly before apex..... *L. baishuica*
- Posterior tibiae of males with different modification or without secondary sexual characters.....72
- 72 Posterior tibiae of males medially with a single spine shortly before apex *L. naxiorum*
- Posterior tibiae of males with different modification or without secondary sexual characters.....73
- 73 All tibiae in male without distinct modifications.....74
- Anterior and/or posterior tibiae in male modified78
- 74 Pronotum cordiform, basal margin of pronotum distinctly narrower than anterior margin.....75

- Pronotum broad, subquadrate or round, basal margin not distinctly narrower than anterior margin.....76
- 75 Body length 4.6 mm; aedeagus with long triangular apicale.....*L. zogqenica*
- Body length 6.0–8.5 mm; aedeagus with spade-like apicale with blunt tip....
..... *L. fouquei*
- 76 Pronotum flat and subquadrate.....77
- Pronotum convex and round *L. langmusica*
- 77 Pronotum with large but sparse punctation; aedeagus with triangular apicale with acute tip..... *L. alesi*
- Pronotum with fine but dense punctation; aedeagus with spade-like apicale with blunt tip *L. nyingchica*
- 78 Elytral rows distinctly extinguished in the posterior part of the elytra; elytral intervals distinctly shagreened and dull.....*L. xuerensis*
- Elytral rows more or less complete; elytral intervals shining79
- 79 Pronotum cordiform, its base distinctly narrower than anterior margin80
- Pronotum round or subquadrate, its base more or less as wide as anterior margin81
- 80 Body length 10.0–11.5 mm; elytra with rows of punctures in distinct striae; posterior tibiae of males swollen interiorly in the middle; apicale of aedeagus thin and finger-like *L. gigantea*
- Body length 8.0–9.0 mm; elytra with rows of punctures without striae; posterior tibiae of males swollen interiorly at base; apicale of aedeagus broad spade-like.....*L. baiorum*
- 81 Basal margin of pronotum bent downwards, so this margin is on a distinctly deeper level than disc.....*L. kangdingica*
- Basal margin of pronotum not bent downwards, so this margin is more or less on the same level as disc.....82
- 82 All tibiae of males with a few indistinct granules at the inner side, but without excavations or dilatations; body length in the average smaller (4.5–6.5 mm).
.....*L. xueshanica*
- Anterior tibiae of males interiorly with excavation, posterior tibiae interiorly swollen or with hooked apex.....83
- 83 Pronotum round; posterior tibiae of males interiorly with hooked apex; apicale of aedeagus longer spade-like *L. zongdianica*
- Pronotum subquadrate; posterior tibiae of males interiorly with dilatation in the distal part; apicale of aedeagus very short and broad..... *L. nujiangica*
- 84 Eyes prominent; posterior tibiae of males medially swollen and interiorly with hooked apex..... *L. baoshanica*
- Eyes not prominent; posterior tibiae of males either differently modified or completely unmodified85
- 85 Elytral intervals between elytral rows either with distinct scattered punctures or with an additional row of large punctures (interval punctures about half as large as punctures of the rows)86

- Elytral intervals without or only with a row of indistinct very fine punctures in the elytral intervals.....89
- 86 Elytral intervals with a single row of distinct punctures; posterior tibiae of males medially granulated.....*L. becvari*
- Elytral intervals with scattered dense and large punctation.....87
- 87 Posterior tibiae of males medially with a distinct tooth; apicale of aedeagus broad and spade-like..... *L. houzhenzica*
- Posterior tibiae of males only with finely hooked inner apex; apicale of aedeagus longer and triangular88
- 88 Pronotum and elytra dull, punctation of pronotum confluent; anterior femora of males medially granulated; anterior tibiae of males with a hooked inner apex*L. bifoveolata*
- Pronotum and elytra shining, punctation of pronotum separated; anterior femora of males smooth; anterior tibiae of males distinctly swollen medially*L. puetzi*
- 89 Pronotum and elytra with long and erect setae.....90
- Pronotum and elytra with short, adpressed setae96
- 90 Pronotum round or cordiform.....91
- Pronotum subquadrate or trapezoid.....92
- 91 Pronotum round; base of pronotum indistinctly bordered and bent downwards; pronotum with fine punctation, these punctures distinctly finer than punctures in the elytral rows*L. hingstoni*
- Pronotum cordiform; base of pronotum unbordered and not bent downwards; punctures of pronotum as large as those of elytral rows*L. motogana* sp. n.
- 92 Pronotum trapezoid.....93
- Pronotum subquadrate94
- 93 All tibiae of males without modification *L. moxica*
- Middle and posterior tibiae of males with hooked inner apex, posterior tibiae of males with small spines medially..... *L. zhengi*
- 94 All tibiae of males with granulation at apical half of inner sides *L. liangi* sp. n.
- All tibiae of males without modification95
- 95 Apicale of aedeagus triangular with sinuated lateral margins and finger-like tip..... *L. watanabei*
- Apicale of aedeagus broad with blunt tip.....*L. daliensis*
- 96 Pronotum with coarse punctation, punctures often confluent, disc with distinct impressions, surface dull and shagreened97
- Pronotum with finer punctation, punctures never confluent, disc without impressions, surface shining.....99
- 97 Anterior margin of pronotum excavated and anterior corners protruding, lateral margins distinctly bordered *L. yuzhuensis*

- Anterior margin of pronotum not distinctly protruding, lateral margins unbordered or at least indistinctly marked **98**
- 98 Elytral inner intervals flat, intervals V and VII convex; intervals about 3 times as wide as the punctures of the elytral rows; setae of elytra intervals distinctly longer than setae of the rows..... ***L. luhuoica***
- Elytral intervals equally convex; intervals about 1–2 times as wide as the punctures of the elytral rows; setae of elytral intervals as long as setae of the rows..... ***L. wrasei***
- 99 Pronotum widest in the anterior third, lateral margins bordered **100**
- Pronotum widest in the middle, lateral margins unbordered..... **101**
- 100 Elytral intervals with a row of fine punctures bearing short adpressed setae; elytra longer and parallel. –Sichuan..... ***L. paomaica***
- Elytral intervals scattered with dense fine punctation, punctures bearing longer adpressed setae; elytra shorter and oval.–Yunnan..... ***L. gyalthagica***
- 101 Apicale of aedeagus triangular with straight sides and with acute tip
..... ***L. brendelli***
- Apicale of aedeagus broad with sinuated sides and blunt tip..... ***L. emeishana***

***Laena quadrata* sp. n.**

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http://species-id.net/wiki/Laena_quadrata

Figs 1, 7–14

Type material. Holotype ♂ (MHBU): China, Xizang, Gyaca Coun., Lasui [29.0649°N, 92.4656°E], 3500 m, 29 June 2009, G. D. Ren leg.

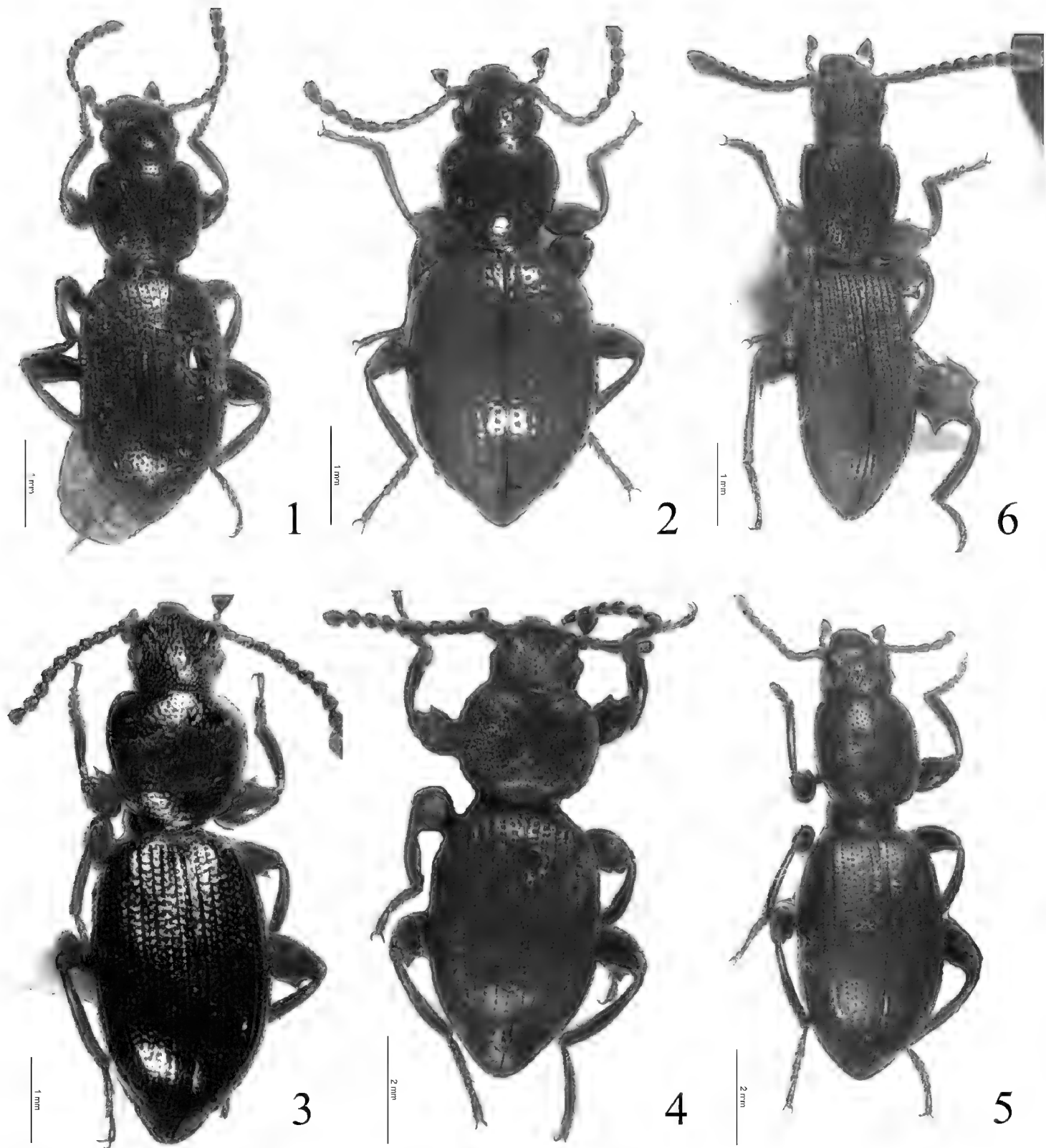
Etymology. Named after the shape of the pronotum.

Diagnosis. The new species shares with *Laena yasuakii* Masumoto, 1996 from Yunnan having the profemora with tooth, but it can be separated mainly by the shape of the pronotum and aedeagus, protibiae with a parallel-sided broadened anterior part.

Description. Male. Eyes (Fig.1) elliptical, moderately prominent. Antennae (Fig. 7) extending to base of pronotum, ratio of length (width) of antennomeres II–XI as follows: 5.5 (4.9): 10.0 (4.8): 7.1 (5.5): 7.9 (6.5): 7.1 (6.0): 7.3 (5.9): 7.3 (6.1): 8.0 (7.5): 8.5 (8.3): 12.5 (9.1).

Pronotum (Fig. 1) nearly quadrate, 1.2 times as wide as long, widest at middle; disc with large punctures, punctures medially somewhat sparser than laterally, their distance 1–4 times as long as puncture diameter, most punctures with long and erect setae, surface flat and shining, lateral margins weakly bordered, basal margin unbordered and not bent downwards, posterior angles rounded; propleura with smaller and sparser punctures and shorter setae than those of disc.

Elytra (Fig. 1) nearly parallel-sided from base to middle, 1.9 times as long as wide, widest at middle; punctural rows without striae, punctures as large as those of pro-



Figures 1–6. 1 *Laena quadrata* sp. n., male 2 *Laena motogana* sp. n., male 3 *Laena chiloriluxa* sp. n., male 4 *Laena dentata* sp. n., male 5 *Laena liangi* sp. n., male 6 *Laena dentatocrassa* sp. n., male.

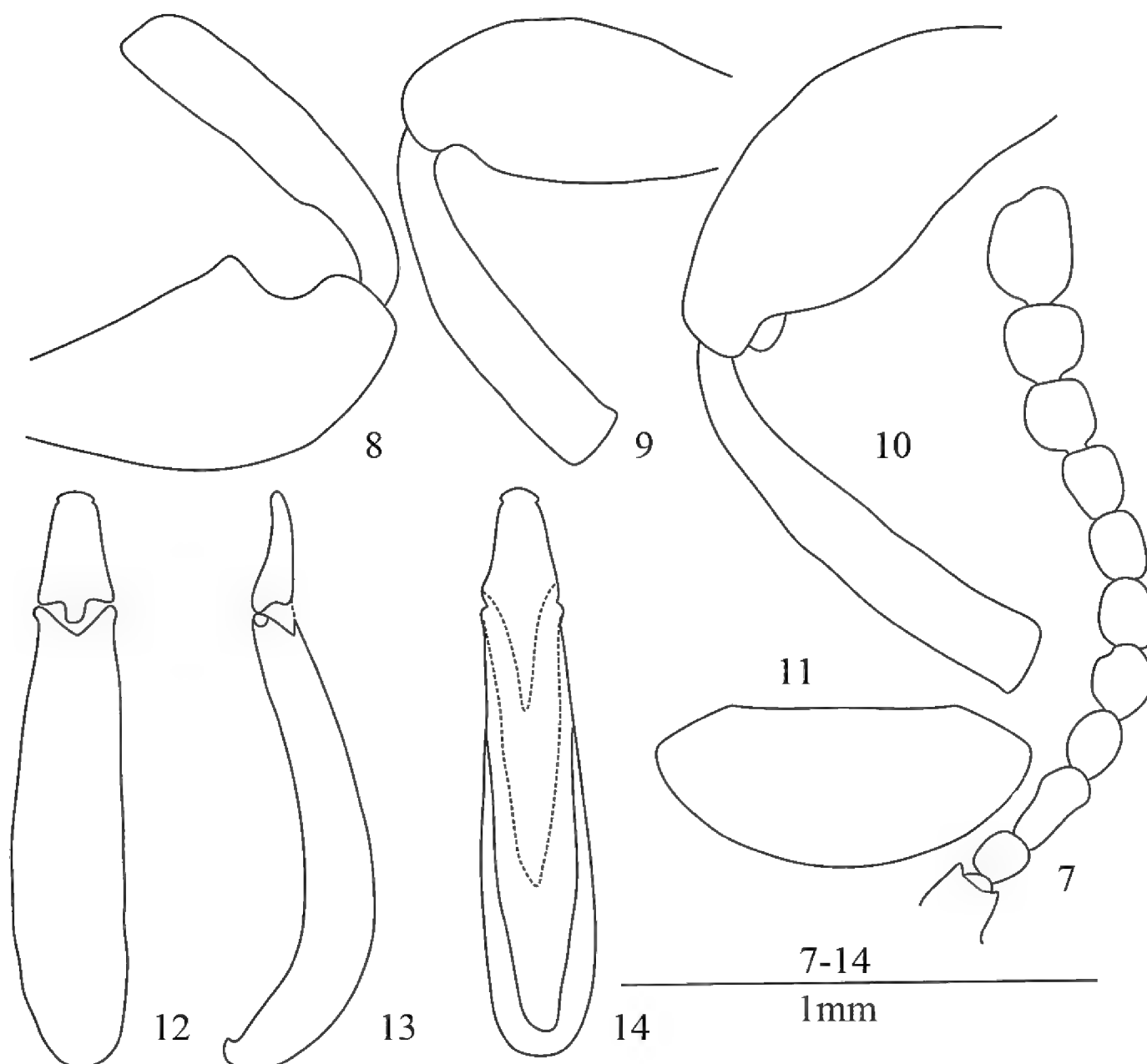
notum, each puncture with long and erect seta, intervals with regular row of small punctures each bearing a similar seta, all intervals flat and shagreened, interval IX with 4 indistinct setiferous umbilicate pores, interval VII without them.

Anterior femur (Fig. 8) with tooth, other femora (Figs. 9–10) unarmed. Anterior tibiae with parallel-sided broadened anterior part.

Last abdominal ventrite (Fig. 11) rounded at apex. Aedeagus see Figs. 12–14.

Female: unknown.

Body length: 4.5 mm.



Figures 7–14. *Laena quadrata* sp. n. **7** male antenna, dorsal view **8** anterior femur and tibia, male, ventral view **9** middle femur and tibia, male, ventral view **10** posterior femur and tibia, male, ventral view **11** last abdominal ventrite, male, ventral view **12–14** aedeagus in dorsal, lateral and ventral views.

***Laena motogana* sp. n.**

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http://species-id.net/wiki/Laena_motogana

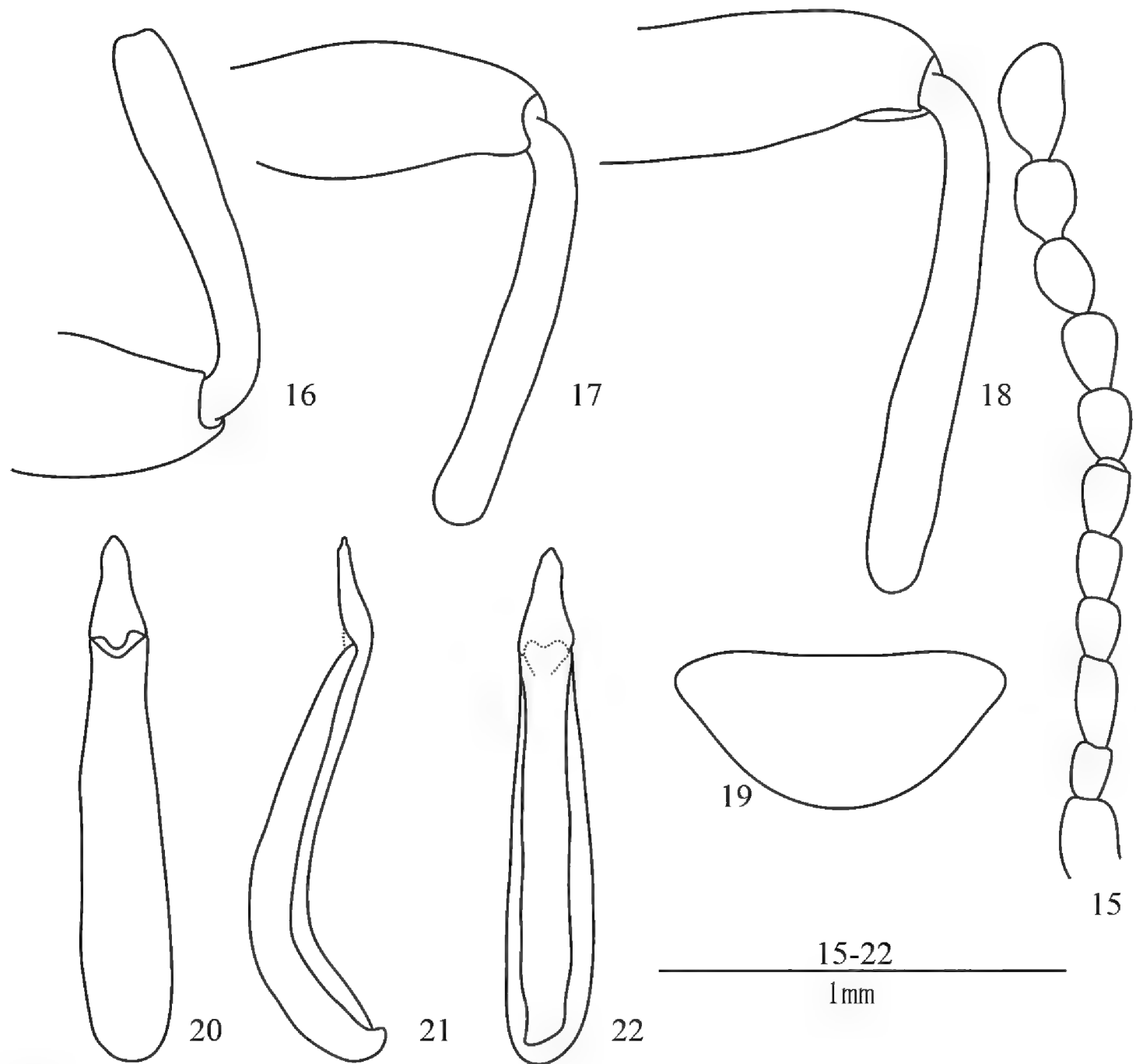
Figs 2, 15–22

Type material. Holotype ♂ (MHUB): China, Xizang, Môdog Coun., Nage-Dayandong, 2900–3300 m, 12 August 2005, L. Tang leg.

Paratype: 1♂ (MHUB): labelled as the holotype; 1♂, (MHUB): China, Xizang, Môdog Coun., Hanmi, 2200 m, 23–27 August 2005, L. Tang leg; 1♂ (SMNS): China, Xizang, Môdog Coun., Nage, 3000–3500 m, 11 August 2005, L. Tang leg.

Etymology. Named after the type locality.

Diagnosis. The new species is similar to *Laena hingstoni* Schuster, 1926, both from Xizang, by similar body shape, but can be separated by the smaller body size, the completely unbordered lateral margin of the pronotum, and flat elytral intervals.



Figures 15–22. *Laena motogana* sp. n. **15** male antenna, dorsal view **16** anterior femur and tibia, male, ventral view **17** middle femur and tibia, male, ventral view **18** posterior femur and tibia, male, ventral view **19** last abdominal ventrite, male, ventral view **20–22** aedeagus in dorsal, lateral and ventral views.

Description. Male. Eyes (Fig. 2) rounded, moderately prominent. Antennae (Fig. 15) extending to base of pronotum, ratio of length (width) of antennomeres II–XI as follows: 7.0 (4.8): 10.8 (5.0): 7.5 (5.3): 8.0 (5.5): 10.0 (5.4): 8.9 (6.3): 9.5 (6.8): 10.0 (7.0): 10.0 (8.0): 14.9 (8.2).

Pronotum (Fig. 2) cordiform, basal margin distinctly narrower than anterior margin, 1.2 times as wide as long, widest just behind anterior margin; disc scattered with some punctures, their distance 2–5 times as long as puncture diameter, all punctures with setae slightly varying in length, surface flat and shining, lateral margins unborded, basal margin unborded and not bent downwards, posterior angles rounded; propleura with smaller punctures and shorter setae than those of disc.

Elytra (Fig. 2) oblong ovate, 1.7 times as long as wide, widest at middle; punctural rows without striae, punctures as large as those on pronotum and each bearing a seta,

intervals with very fine punctures, each bearing a seta longer than those of punctures of rows, all intervals flat and shining, interval IX with 3 setiferous umbilicate pores.

All femora (Figs. 16–18) without teeth. All tibiae (Figs. 16–18) normal.

Last abdominal ventrite (Fig. 19) triangular at apex. Aedeagus see Figs. 20–22.

Female: unknown.

Body length: 4.3–5.0 mm.

***Laena chiloriluxa* sp. n.**

urn:lsid:zoobank.org:act:A4C0DDAD-A23A-4C5F-954D-F3B82A789A37

http://species-id.net/wiki/Laena_chiloriluxa

Figs 3, 23–31

Type material. Holotype ♂ (MHBU): China, Yunnan Province, Bababhe. N. R. Benggangan, 1930 m, 14 November 2008, J. Y. Hu & L. Tang leg.

Paratype: 1♂ (SMNS): labelled as the holotype; 1♀ (SMNS), 1♀ (MHBU): China, Yunnan, Bababhe, Dianshita, 1900 m, 30 June 2005, LI & LI leg; 1♀ (MHUB): China, Yunnan, Bababhe. N. R. Benggangan [22.25833° N, 100.66361° E], 1700 m, 14 November 2008, J. Y. Hu & L. Tang leg.

Etymology. Named after the green metallic shine of the body.

Diagnosis. The new species is similar to *Laena luguica* Schawaller, 2001, but can be easily distinguished from it by the following characters: (1) all tibiae of male with finely hooked inner apex, especially the middle tibiae; (2) last abdominal ventrite of male denticulate at apex; (3) the shape of the aedeagus is different.

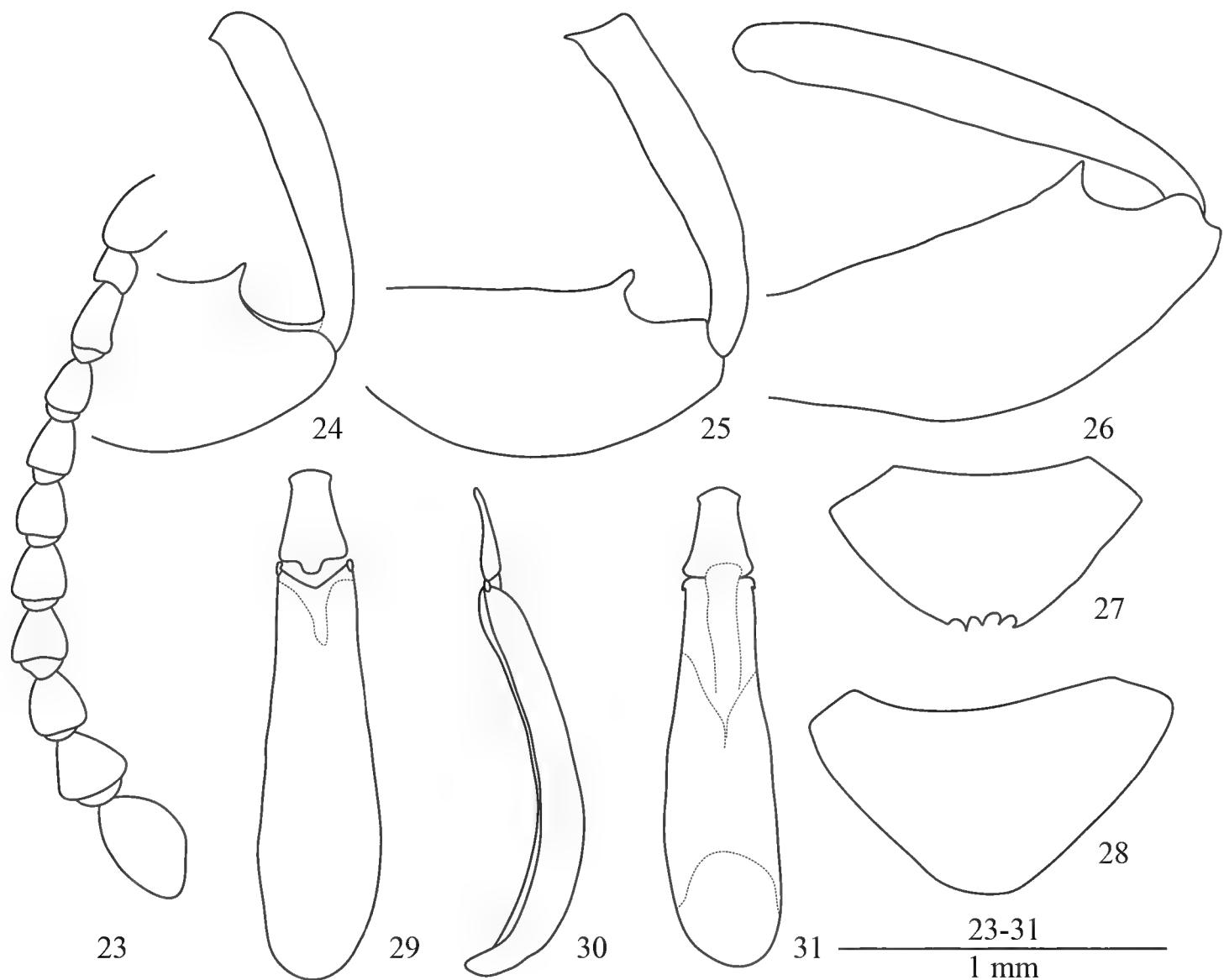
Description. Male. Dorsal side with green metallic shine. Eyes (Fig. 3) elliptical, moderately prominent. Antennae (Fig. 23) extending to base of pronotum, ratio of length (width) of antennomeres II–XI as follows: 5.3 (6.0): 13.3 (6.3): 10.0 (6.7): 10.3 (6.8): 10.1 (7.8): 10.2 (8.1): 10.8 (8.5): 10.0 (8.8): 12.0 (11.5): 18.3 (11.5).

Pronotum (Fig. 3) cordiform, basal margin distinctly narrower than anterior margin, 1.2 times as wide as long, widest just behind anterior margin; disc with small punctures, punctures medially somewhat sparser than laterally, their distance 2–6 times as long as puncture diameter, most punctures with long and erect setae, surface flat and shining, lateral margins bordered, basal margin bordered, feebly in middle, not bent downwards, posterior angles rounded; propleura with smaller punctures and shorter setae than those of disc.

Elytra (Fig. 3) oblong, 2.1 times as long as wide, widest at middle; punctural rows placed in indistinct striae, punctures distinctly larger than those of pronotum and each bearing a long and erect seta, intervals with regular row of small punctures each bearing a similar seta, all intervals flat and shining, interval IX with 5 setiferous umbilicate pores, interval VII in both humeral and posterior region with a setiferous pore.

All femora (Figs. 24–26) each with a strong tooth. All tibiae (Figs. 24–26) with finely hooked inner apex, especially on middle tibiae.

Last abdominal ventrite (Fig. 27) denticulate at apex. Aedeagus see Figs. 29–31.



Figures 23–31. *Laena chiloriluxa* sp. n. **23** male antenna, dorsal view **24** anterior femur and tibia, male, ventral view **25** middle femur and tibia, male, ventral view **26** posterior femur and tibia, male, ventral view **27** last abdominal ventrite, male, ventral view **28** last abdominal ventrite, female, ventral view **29–31** aedeagus in dorsal, lateral and ventral views.

Female: Dorsal side without green metallic shine. Last abdominal ventrite (Fig. 28) sharp at apex, not denticulate.

Body length: 6.2–7.2 mm.

***Laena dentata* sp. n.**

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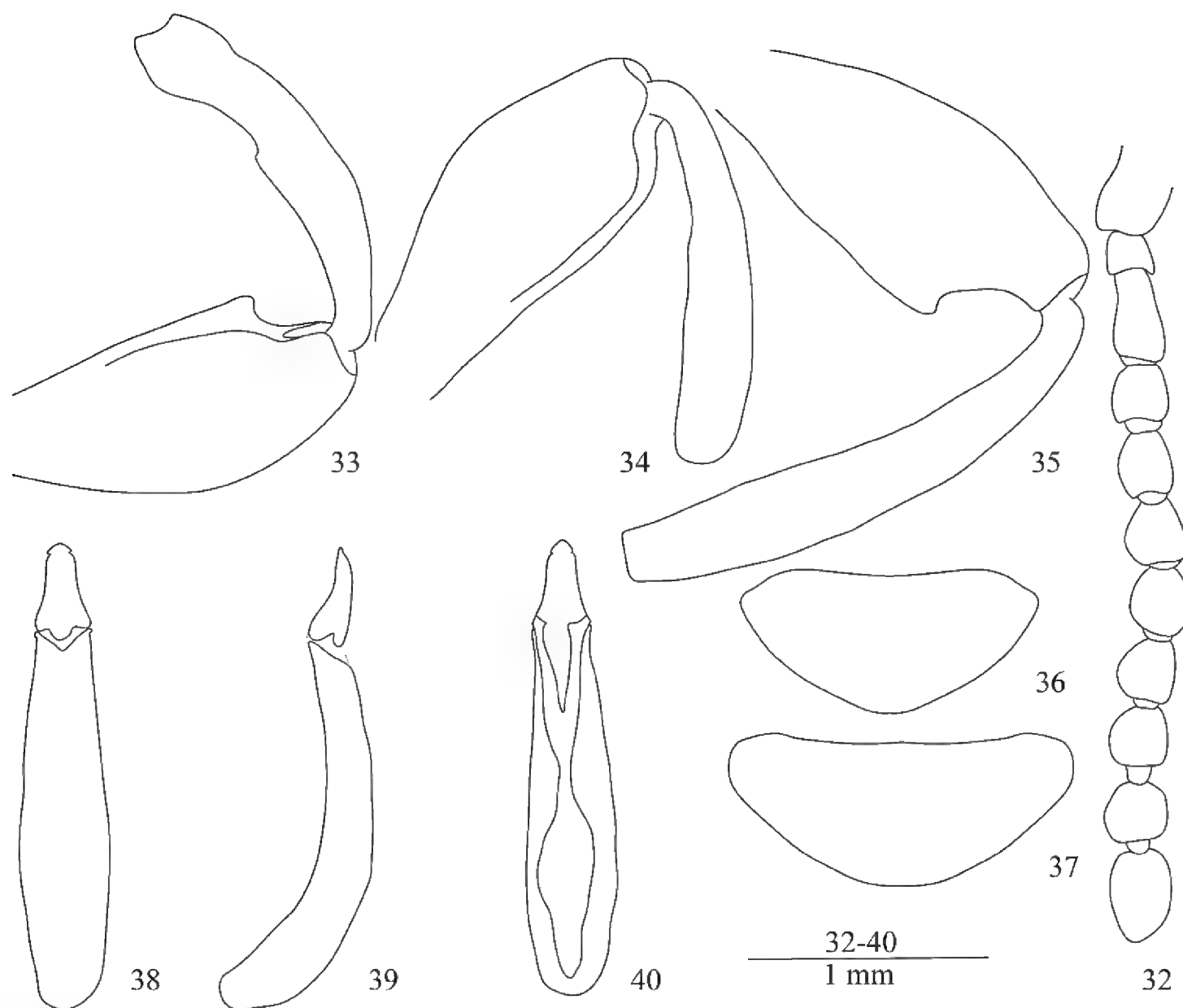
http://species-id.net/wiki/Laena_dentata

Figs 4, 32–40

Type material. Holotype ♂ (MHUB): China, Yunnan, Dali, Cangshan E slope, 3400 m, 19 August 2008, J. S. Xu leg.

Paratype: 1♀ (MHUB): labelled as the holotype.

Etymology. Named after anterior tibiae of male with a medial tooth.



Figures 32–40. *Laena dentata* sp. n. **32** male antenna, dorsal view **33** anterior femur and tibia, male, ventral view **34** middle femur and tibia, male, ventral view **35** posterior femur and tibia, male, ventral view **36** last abdominal ventrite, male, ventral view **37** last abdominal ventrite, female, ventral view **38–40** aedeagus in dorsal, lateral and ventral views.

Diagnosis. The new species shares with *Laena schusteri* Schawaller, 2001 the body shape, and the medial tooth of anterior tibia, but can be separated by the teeth of all femora, and middle and posterior tibiae of male with finely hooked inner apex.

Description. Male. Eyes (Fig. 4) elliptical, moderately prominent. Antennae (Fig. 32) extending to base of pronotum, ratio of length (width) of antennomeres II–XI as follows: 7.8 (10.8): 22.1 (11.5): 15.5 (12.8): 16.8 (12.0): 15.0 (13.9): 16.5 (13.9): 15.5 (13.0): 17.8 (13.1): 16.9 (14.2): 20.8 (13.9).

Pronotum (Fig. 4) elliptical, 1.3 times as wide as long, widest at middle; disc with small scattered punctures, their distance 0.5–3 times as long as puncture diameters, all punctures with short and adpressed setae, disc with a pair of feeble impressions, lateral margins narrowly bordered, basal margin unbordered, and not bent downwards, posterior angles rounded; propleura without punctures and setae.

Elytra (Fig. 4) nearly parallel-sided from base to middle, 1.9 times as long as wide, widest at middle; elytra with punctural rows of without striae, punctures distinctly larger than those of pronotum, each puncture bearing a short and adpressed seta, intervals with nearly invisible punctures, but with some similar setae, all intervals flat and shagreened, interval IX with 3 setiferous umbilicate pores.

All femora each with a tooth, but middle femur (Fig. 34) with a pair of equally sized teeth. Anterior tibia (Fig. 33) with median tooth and dilated apex, anterior and middle tibiae excavate medially and with caespitose setae, middle and posterior tibiae (Fig. 35) with finely hooked inner apex.

Last abdominal ventrite (Fig. 36) somewhat sharp at apex. Aedeagus see Figs. 38–40.

Female: Last abdominal ventrite (Fig. 37) somewhat rounded at apex. Middle femora with a pair of unequal teeth.

Body length: 8.5–9.5 mm.

***Laena liangi* sp. n.**

urn:lsid:zoobank.org:act:1E647A31-054A-4B93-83FF-D93F7764DCD3

http://species-id.net/wiki/Laena_liangi

Figs 5, 41–48

Type material. Holotype ♂ (MHUB): China, Yunnan, Gongshan County, No 12 Bridge [27.72°N, 98.60°E], 2750 m, Sino-America Exped, 15 June 2000, H. B. Liang leg.

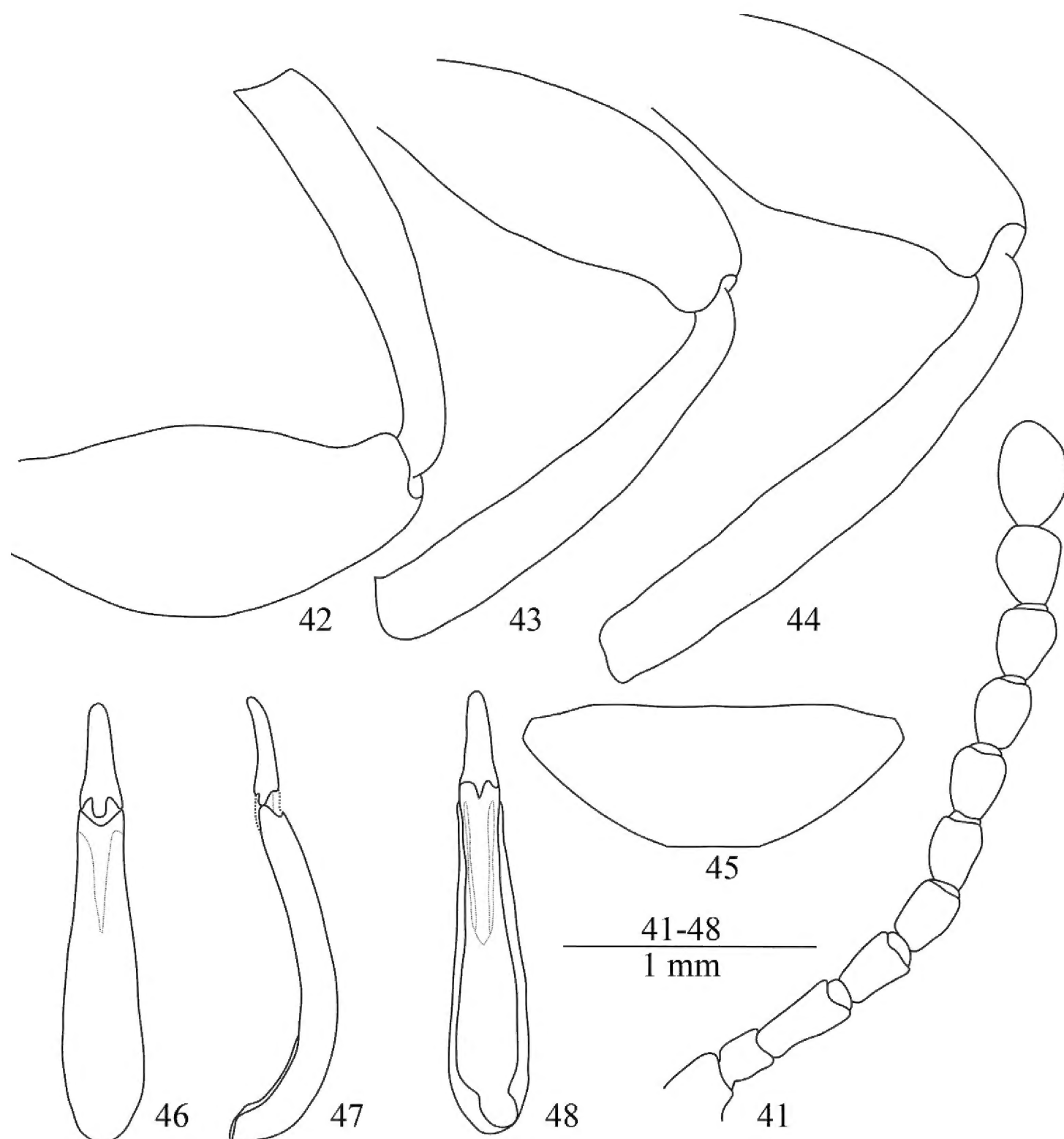
Etymology. Named after Dr. LIANG Hong-Bin, who collected several new species of *Laena* in China.

Diagnosis. The new species is similar to *Laena kalabi* Schawaller, 2008, but can be easily distinguished from it by the following characters: (1) middle tibiae of male with finely hooked inner apex; (2) anterior and middle tibiae of male medially not sinuate, posterior tibiae of male apex not dilated; (3) shape of the aedeagus is different.

Description. Male. Eyes (Fig. 5) elliptical, weakly prominent. Antennae (Fig. 41) extending to base of pronotum, ratio of length (width) of antennomeres II–XI as follows: 8.2 (8.5): 21.5 (8.3): 15.5 (8.5): 15.0 (10.0): 14.0 (10.1): 15.5 (11.0): 14.8 (11.0): 15.0 (11.8): 15.9 (13.0): 21.5 (14.0).

Pronotum (Fig. 5) quadrate, 1.0 times as wide as long, widest at middle; disc scattered with small punctures, their distance 1–6 times as long as puncture diameters, all punctures with setae slightly varying in length, surface nearly flat and dull, medial part of base feebly impressed, lateral margins indistinctly bordered, basal margin unbordered and not bent downwards, posterior angles rounded; propleura with larger punctures and shorter setae than those of disc.

Elytra (Fig. 5) nearly parallel-sided, 2.0 times as long as wide, widest at middle; punctural rows in indistinct striae, punctures as large as those on pronotum, and each



Figures 41–48. *Laena liangi* sp. n. **41** male antenna, dorsal view **42** anterior femur and tibia, male, ventral view **43** middle femur and tibia, male, ventral view **44** posterior femur and tibia, male, ventral view **45** last abdominal ventrite, male, ventral view **46–48** aedeagus in dorsal, lateral and ventral views.

bearing a shorter seta, intervals with very small punctures, each bearing a similar seta, all intervals flat and dull, interval IX with 3 indistinct setiferous umbilicate pores, interval VII with an indistinct setiferous pore in posterior region.

All femora (Figs. 42–44) without teeth. Middle tibiae (Fig. 43) with finely hooked inner apex, all tibiae (Figs. 42–44) with granulation from middle to apex at inner side.

Last abdominal ventrite (Fig. 45) truncate at apical margin. Aedeagus see Figs. 46–48.

Female: unknown.

Body length: 9.4 mm.

***Laena dentatocrassa* sp. n.**

urn:lsid:zoobank.org:act:FE8B1802-76E7-4E46-BD42-9D415A5BB39F

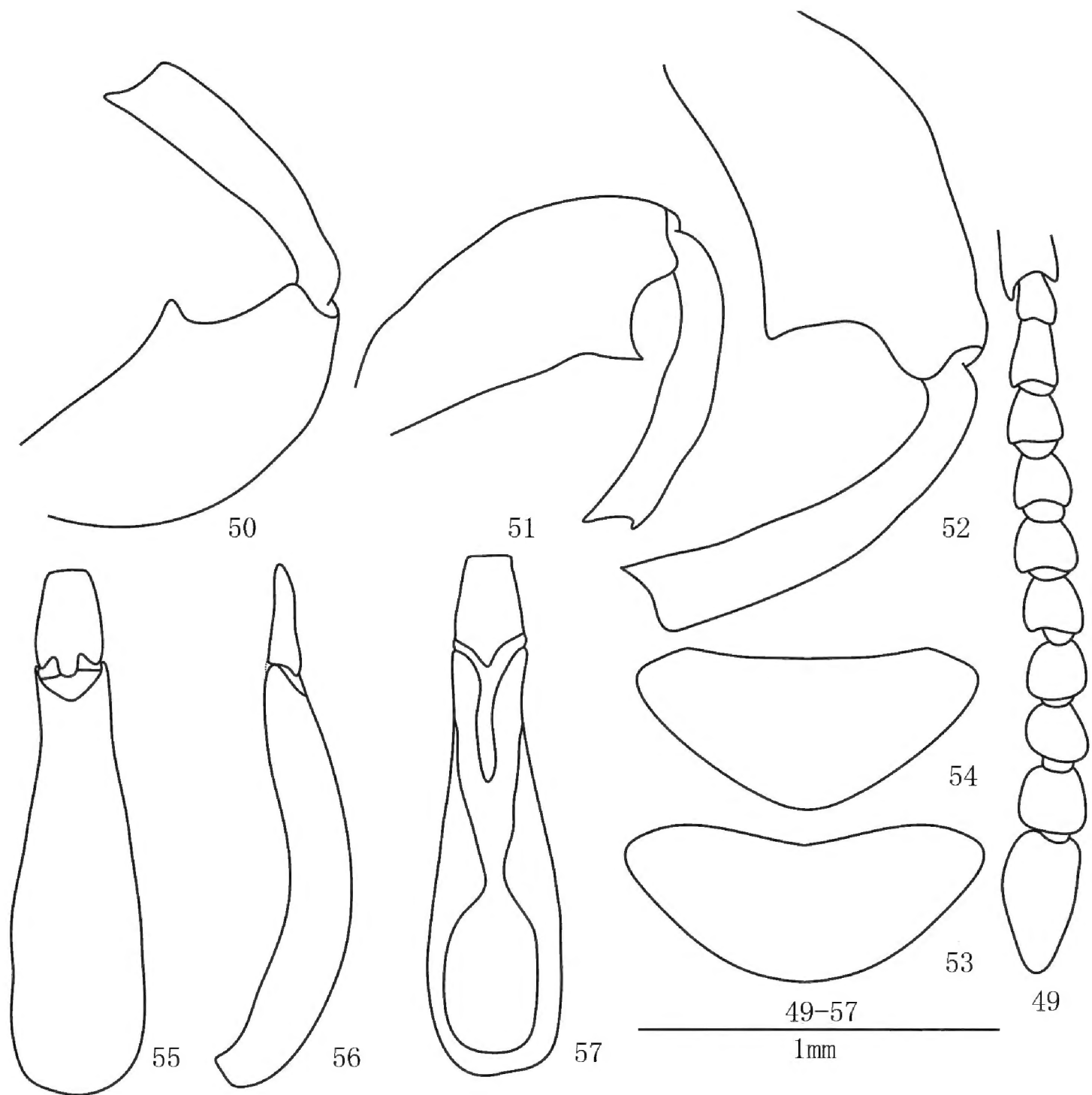
http://species-id.net/wiki/Laena_dentatocrassa

Figs 6, 49–57

Type material. Holotype ♂ (MHUB): China, Hainan Island, Jianfengling, 25 May 2011, X. Q. Yang & L. F. Wang leg.

Paratype: 1♂ (SMNS), 1♂ (MHUB): China, Hainan Island, Jianfengling, 25 May 2011, X. Q. Yang & C. Zhang leg; 1♂, 2♀♀ (MHUB): labeled as the holotype.

Etymology. Named after the massive teeth of the femora.



Figures 49–57. *Laena dentatocrassa* sp. n. **49** male antenna, dorsal view **50** anterior femur and tibia, male, ventral view **51** middle femur and tibia, male, ventral view **52** posterior femur and tibia, male, ventral view **53** last abdominal ventrite, male, ventral view **54** last abdominal ventrite, female, ventral view **55–57** aedeagus in dorsal, lateral and ventral views.

Diagnosis. The new species is similar to *Laena jizushana* Masumoto, 1996, but can be easily distinguished from it by the following characters: (1) body with long and erect setae; (2) posterior femur of male with distinct granulation at inner side; (3) all tibiae of male with granulation at inner side and with finely hooked inner apex; (4) the shape of the aedeagus is different.

Description. Male. Eyes (Fig. 6) rounded, prominent. Antennae (Fig. 49) extending to base of pronotum, ratio of length (width) of antennomeres II–XI as follows: 5.5 (5.5): 10.8 (6.5): 9.3 (7.5): 8.9 (7.8): 8.3 (9.0): 9.0 (8.5): 8.9 (8.5): 9.0 (8.5): 10.1 (9.8): 19.0 (11.0).

Pronotum (Fig. 6) elongate, 0.9 times as wide as long, widest just behind anterior margin, basal margin distinctly narrower than anterior margin; disc with large punctures, their distance 0.5–2 times as long as puncture diameters, all punctures with long and erect setae, basal part with feeble longitudinal impression, lateral margins indistinctly bordered, basal margin unbordered and not bent downwards, posterior angles rounded; propleura with wider punctures and shorter setae than those of disc.

Elytra (Fig. 6) oblong, 2.4 times as long as wide, widest at middle; elytra punctural rows in indistinct striae, punctures as large as those on pronotum, and each bearing a long and erect seta, intervals with a regular row of small punctures each bearing a similar seta, all intervals convex and shining, interval IX with 10 indistinct setiferous umbilicate pores, interval VII with an indistinct setiferous pore in posterior region.

All femora (Figs. 50–52) each with a strong tooth, posterior femora also with distinct granulation at inner side. All tibiae (Figs. 50–52) with granulation at inner side and with finely hooked inner apex.

Last abdominal ventrite (Fig. 53) nearly rounded at apical margin. Aedeagus see Figs. 55–57.

Females: Ventrite (Fig. 54) nearly sharp at apical margin.

Body length: 5.0–6.0 mm.

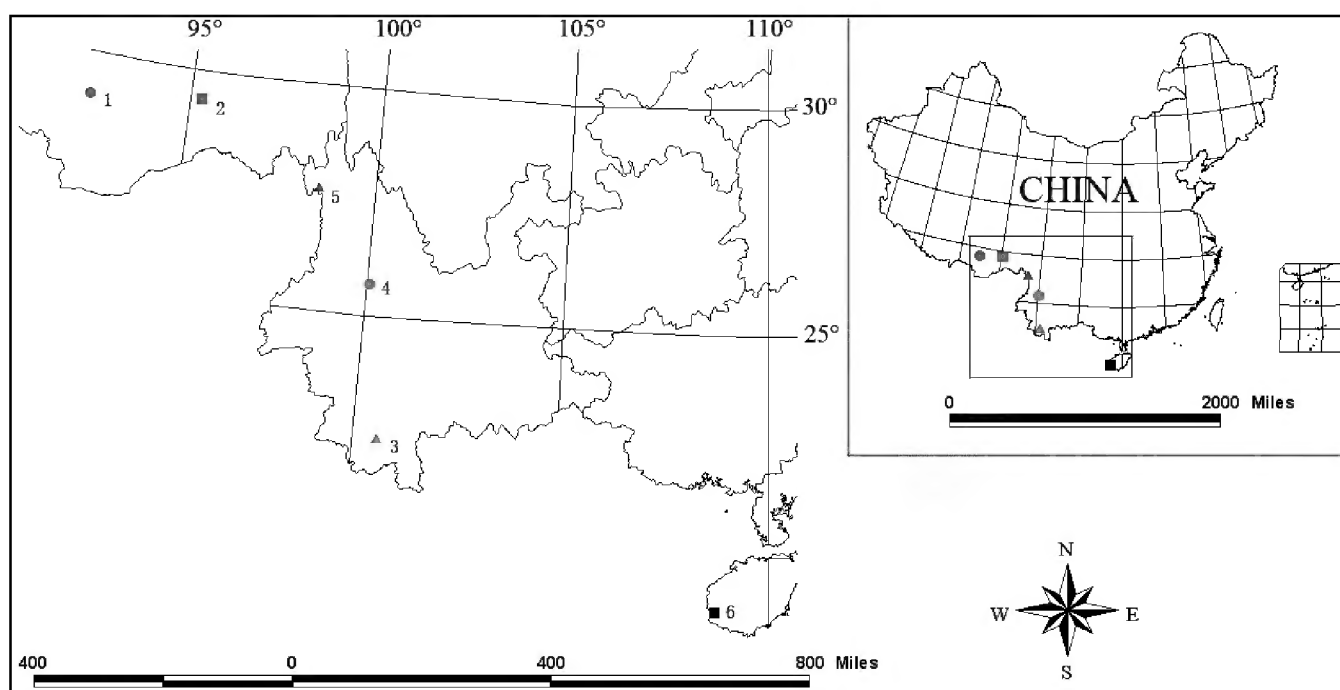


Figure 58. 1 *Laena quadrata* sp. n. 2 *Laena motogana* sp. n. 3 *Laena chiloriluxa* sp. n. 4 *Laena dentata* sp. n. 5 *Laena liangi* sp. n. 6 *Laena dentatocrassa* sp. n.

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References

- Kaszab Z (1956) Neue Tenebrioniden (Coleoptera) aus China. *Annales Historico-Naturales Musei Nationalis Hungarici Pars Zoologica*, 57: 284–285.
- Kaszab Z (1970) Fünf neue Tenebrioniden aus Asien (Coleoptera). *Entomologische Arbeiten aus dem Museum G. Frey* 21: 112–122.
- Li JK, Wang ZY (1993) Soil Beetles of Anhui Province. In: Li JKL, Chen P (Eds) *Studies on Fauna and Ecogeography of Soil Animals*. Northeast Normal University Press, Jilin, 151–166. [In Chinese]
- Masumoto K, Yin WY (1993) Two new Yunnanese beetles of the genera *Laena* (Tenebrionidae) and *Sivacrypticus* (Archeocrypticidae) (Coleoptera). *Elytra* 21 (2): 239–243.
- Masumoto K, Yin WY (1994) Four new *Laena* species (Coleoptera, Tenebrionidae) from Yunnan, Southwest China. *Elytra* 22 (1): 165–170.
- Masumoto K (1996) Fourteen new *Laena* (Coleoptera, Tenebrionidae) from China, Vietnam and Thailand. *Bulletin of the National Science Museum. Tokyo, Series(A)* 22(3): 165–187.
- Masumoto K (1998) New Tenebrionid beetles from East Asia (Coleoptera, Tenebrionidae). *Japanese Journal of Systematic Entomology* 4: 305–319.
- Ren GD, HeY, Yu YZ (1998) Faunistic component and distributional surveying of the known darkling beetles from China (Coleoptera: Tenebrionidae). *Entomological Journal of East China* 1998 7(1): 12–20. [In Chinese]
- Ren GD, Hua HR (2006) Tenebrionidae. In: Li ZZ, Jin DC (Eds) *Insects from Fanjingshan Landscape*. Guizhou Science and Technology Publishing House, Guizhou. 266–267. [In Chinese]
- Schawaller W (2001) The genus *Laena* Latreille (Coleoptera: Tenebrionidae) in China, with descriptions of 47 new species. *Stuttgarter Beiträge zur Naturkunde Serie A (Biologie)*, 632: 1–62.
- Schawaller W (2008) The genus *Laena* Latreille (Coleoptera: Tenebrionidae) in China (part 2), with descriptions of 30 new species and a new identification key. *Stuttgarter Beiträge zur Naturkunde Serie A (Biologie)* 1: 387–411.
- Schuster A (1916) Monographie der Coleopterengattung *Laena* Latreille. *Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien* 66: 495–629.
- Schuster A (1940) Über drei neue asiatische Tenebrioniden (Col. Tenebr.). *Mitteilungen der Münchener Entomologischen Gesellschaft* 30: 861–866.
- Zhao XL, Ren GD (2011) A new species of the genus *Laena* Dejean from Xizang, China (Coleoptera, Tenebrionidae, Lagriinae). *Acta Zootaxonomica Sinica* 36 (3): 568–570.